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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/811,816	03/30/2004	Hiromitsu Yamakawa	25-273	2853

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EXAMINER	
CHOI, HAN S	

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 11/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/811,816	YAMAKAWA, HIROMITSU	
	Examiner	Art Unit	
	Han S. Choi	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 September 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17 and 19* is/are rejected.

7)☒ Claim(s) *18 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishibe et al. (US Pat. 6,067,106).

Referring to claim 1:

- a laser array imaging lens in [16] shown in Fig. 9.
- a single lens component [16] (as a single lens element) with or without a stop positioned on the image side of the single lens component [16] shown in Fig. 9.
- at least one surface of the single lens component [16] is both anamorphic and aspheric (flat surface) in [Col. 17, Lines 1-38]
- a diffractive optical element [24] that is either superimposed on said at least one surface or is formed on another surface of the single lens component [16], said diffractive optical element [24] in [Col. 7, Lines 31-36] being defined by a phase function in [Col. 9, Lines 9-20].

Referring to claim 9:

- the single lens component [16] consists of a single lens element [16] shown in Fig. 9.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3, 7, 11, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando (US Pat. 5,991,063) in view of Imakawa et al. (US Pat. 5,671,077).

Ando discloses the basic elements of the claimed invention. Ando teaches a laser array light source [1] in [Col. 4, lines 24-28]. Ando teaches a laser array imaging lens [7] which receives light from the laser array light source [1], the laser array imaging lens consisting of a single lens component [7] with or without a stop positioned on the image side of the single lens component [7], with at least one surface of the single lens component being aspheric in [Col. 5, Lines 1-3] shown in Fig. 1. Ando does not teach the following condition being satisfied:

$$0.5 < \frac{L}{\left(D_2 \cdot \left(1 - \frac{1}{M}\right)\right)} < 2.0$$

where

L is the distance from the laser array light source to the light-source side of the laser array imaging lens;

D_2 is the distance along the optical axis from the image-side surface of the laser array imaging lens to the position where the centers of the beams from the laser elements of the laser array light source intersect the optical axis after being refracted by the laser array imaging lens; and

M is the image magnification.

Imakawa et al. teaches the same condition to an anamorhpic and aspheric lens [21] in [Col. 15, Lines 39-44]. The lens is not the imaging lens, but the same properties are associated with an anamorphic and aspheric lens whether it is located as an imaging lens or another lens. Imakawa et al. teaches the distance (d_0) as 6.667mm from the laser array light source to the light-source side of the anamorhpic lens [21] in [Col. 15, Lines 65-66]. Imakawa et al. teaches the distance (d_2) as 18mm along the optical axis from the second surface of the anamorphic lens to the position where the centers of the beams from the laser elements of the laser array light source intersect shown in Fig. 28A (13A is the intersection point of the centers of the beams on the optical axis) the optical axis after being refracted by the anamorphic lens [21] in [Col. 16, Lines 1-2]. Imakawa et al. teaches the image magnification (m) as 3. Therefore the following condition is met:

$$0.5 < \frac{6.667}{\left(18 \cdot \left(1 - \frac{1}{3}\right)\right)} < 2.0 \Rightarrow 0.5 < 0.555583 < 2.0$$

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the anamorhpic and aspheric lens

characteristics of Imakawa et al. with the laser array imaging lens of Ando for the purpose of obtaining high performance in image formation.

Referring to claim 7, Ando teaches a means for independently modulating the individual light emitting elements of the laser array light source [1], based on a prescribed signal in [Col. 4, Lines 24-28, and Lines 34-36] and a means for relatively moving a surface [12] to be scanned and that is positioned substantially at the image surface of the laser array imaging lens [7], in a sub-scanning direction that is roughly perpendicular to the direction [arrow B] of the imaged dots that form one or more rows at the image surface [12] in [Col. 5, Lines 3-11, and Lines 35-42] shown in Fig. 1. Referring to claims 11 and 15, Ando teaches a single lens component consisting [7] of a single lens element in [Col. 5, Lines 1-3] shown in Fig. 1.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibe et al. (US Pat. 6,067,106) in view of Sissom et al. (US Pat. 5,912,768).

Ishibe et al. discloses the basic elements of the claimed invention except for a stop positioned on the image side of the single lens component at a specified distance.

Sissom et al. teaches a stop [54] positioned on the image side of the single lens component imaging lens [50] at a distance away from the imaging lens [50] in [Col. 4, Lines 38-39] shown in Fig. 2.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teachings of Sissom et al. with the laser

array imaging lens of Ishibe et al. for the purpose of having a specified working f-number.

6. Claims 5 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibe et al. (US Pat. 6,067,106) in view of Paoli et al. (US Pat. 5,956,070).

Ishibe et al. discloses the basic elements of the claimed invention. Ishibe et al. teaches a means for relatively moving a surface to be scanned which is the photosensitive drum [7], that is positioned substantially at an image surface of the laser array imaging lens [6], in a sub-scanning direction that is roughly perpendicular to the direction [arrow B] of the image dots that form one or more rows at the image surface in [Col. 7, Lines 14-26, and Lines 43-46] shown in Fig. 2. Ishibe et al. does not teach a laser array light source made by arraying multiple light emitting elements in one or more rows and a means for independently modulating the individual light emitting elements of the laser array light source, based on a prescribed signal.

Paoli et al. teaches a laser array light source [202] made by arraying multiple light emitting elements in one or more rows [208, 210, 212, and 214] in [Col. 9, Lines 23-25] shown in Fig. 11. Paoli et al. teaches a means for independently modulating the individual light emitting elements of the laser array light source [202], based on a prescribed signal in [Col. 9, Lines 18-22].

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teachings of Paoli et al. with the laser

array imaging lens of Ishibe et al. for the purpose of simultaneously exposing widely separated positions on the same or different photoreceptors.

Referring to claim 13, Ishibe et al. teaches a single lens component [16] consists of a single lens element [16] shown in Fig. 9.

7. Claims 6, 10, 14, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibe et al. (US Pat. 6,067,106) in view of Sissom et al. (US Pat. 5,912,768) as applied to claim 2 above, and further in view of Paoli et al. (US Pat. 5,956,070).

Ishibe et al. in view of Sissom et al. discloses the basic elements of the claimed invention. Ishibe et al. teaches a means for relatively moving a surface to be scanned which is the photosensitive drum [7], that is positioned substantially at an image surface of the laser array imaging lens [6], in a sub-scanning direction that is roughly perpendicular to the direction [arrow B] of the image dots that form one or more rows at the image surface in [Col. 7, Lines 14-26, and Lines 43-46] shown in Fig. 2. Ishibe et al. in view of Sissom et al. does not teach a laser array light source made by arraying multiple light emitting elements in one or more rows and a means for independently modulating the individual light emitting elements of the laser array light source, based on a prescribed signal.

Paoli et al. teaches a laser array light source [202] made by arraying multiple light emitting elements in one or more rows [208, 210, 212, and 214] in [Col. 9, Lines 23-25] shown in Fig. 11. Paoli et al. teaches a means for independently modulating the

individual light emitting elements of the laser array light source [202], based on a prescribed signal in [Col. 9, Lines 18-22].

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teachings of Paoli et al. with the laser array imaging lens of Ishibe et al. in view of Sissom et al. for the purpose of simultaneously exposing widely separated positions on the same or different photoreceptors.

Referring to claims 10 and 14, Ishibe et al. teaches a single lens component [16] consists of a single lens element [16] shown in Fig. 9.

Referring to claim 17 and 19, Ishibe et al. teaches the stop is positioned so that the laser array imaging lens is substantially telecentric on the light-source side (the stop [3] is located in the back focal plane of the imaging lens [6]) in [Col. 6, Lines 53-56] shown in Fig. 3.

8. Claims 4, 8, 12, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando (US Pat. 5,991,063) in view of Imakawa et al. (US Pat. 5,671,077) as applied to claim 3 above, and further in view of Sissom et al. (US Pat. 5,912,768).

Ando in view of Imakawa et al. discloses the basic elements of the claimed invention except for a stop positioned on the image side of the single lens component at a specified distance.

Sissom et al. teaches a stop [54] positioned on the image side of the single lens component imaging lens [50] at a distance away from the imaging lens [50] in [Col. 4, Lines 38-39] shown in Fig. 2.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to incorporate the teachings of Sissom et al. with the laser array imaging lens of Ando in view of Imakawa et al. for the purpose of having a specified working f-number.

Referring to claim 8, Ando teaches Ando teaches a means for independently modulating the individual light emitting elements of the laser array light source [1], based on a prescribed signal in [Col. 4, Lines 24-28, and Lines 34-36] and a means for relatively moving a surface [12] to be scanned and that is positioned substantially at the image surface of the laser array imaging lens [7], in a sub-scanning direction that is roughly perpendicular to the direction [arrow B] of the imaged dots that form one or more rows at the image surface [12] in [Col. 5, Lines 3-11, and Lines 35-42] shown in Fig. 1.

Referring to claims 12 and 16, Ando teaches a single lens component consisting [7] of a single lens element in [Col. 5, Lines 1-3] shown in Fig. 1.

Allowable Subject Matter

9. Claims 18 and 20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

10. Applicant's arguments filed 9/5/06 have been fully considered but they are not persuasive.

Referring to claims 1 and 9, the applicant's arguments are noted. The applicant asserts that the term "imaging lens" and "f-θ lens" are two entirely different types of lenses. Also, asserting the two lenses are different types of lenses, the applicant describes the differences between the purposes and structures of the two lenses and why they cannot be used interchangeably. However, the use of the term "imaging lens" does not distinguish the use and structure of the claimed lens. An "f-θ lens" is an "imaging lens," as it is used in a laser array imaging system and an image passes through the lens. Ishibe et al. teaches the claimed lens.

Referring to claims 3, 7, 11, and 15, the applicant's arguments are noted. The applicant asserts the same reasoning as above that the term "imaging lens" and "f-θ lens" are two entirely different types of lenses. As stated above, the use of the term "imaging lens" does not distinguish the use and structure of the claimed lens. An "f-θ lens" is an "imaging lens," as it is used in a laser array imaging system and an image passes through the lens. Thus, Ando in view of Imakawa et al. teach the claimed invention.

Referring to claim 2, the applicant's arguments are noted. The applicant asserts the same reasoning as above that the term "imaging lens' and "f-θ lens" are two entirely different types of lenses. As stated above, the use of the term "imaging lens" does not

distinguish the use and structure of the claimed lens. An "f-θ lens" is an "imaging lens," as it is used in a laser array imaging system and an image passes through the lens. Thus, Ishibe et al. in view of Sissom et al. teach the claimed invention.

Referring to claims 5 and 13, the applicant's arguments are noted. The applicant asserts the same reasoning as above that the term "imaging lens' and "f-θ lens" are two entirely different types of lenses. As stated above, the use of the term "imaging lens" does not distinguish the use and structure of the claimed lens. An "f-θ lens" is an "imaging lens," as it is used in a laser array imaging system and an image passes through the lens. Thus, Ishibe et al. in view of Paoli et al. teach the claimed invention.

Referring to claims 6, 10, 14, 17, and 19, the applicant's arguments are noted. The applicant asserts the same reasoning as above that the term "imaging lens' and "f-θ lens" are two entirely different types of lenses. As stated above, the use of the term "imaging lens" does not distinguish the use and structure of the claimed lens. An "f-θ lens" is an "imaging lens," as it is used in a laser array imaging system and an image passes through the lens. Thus, Ishibe et al. in view of Sissom et al. and further in view of Paoli et al. teach the claimed invention.

Referring to claims 4, 8, 12, and 16, the applicant's arguments are noted. The applicant asserts the same reasoning as above that the term "imaging lens' and "f-θ lens" are two entirely different types of lenses. As stated above, the use of the term "imaging lens" does not distinguish the use and structure of the claimed lens. An "f-θ lens" is an "imaging lens," as it is used in a laser array imaging system and an image

passes through the lens. Thus, Ando in view of Imakawa et al. and further in view of Sissom et al. teach the claimed invention.

Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Han S. Choi whose telephone number is (571) 272-8350. The examiner can normally be reached on Monday - Friday, 8:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HSC
11/11/06

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